

Mesos @ Bloomberg

MesosCon 2015

Skand S Gupta
Bloomberg LP



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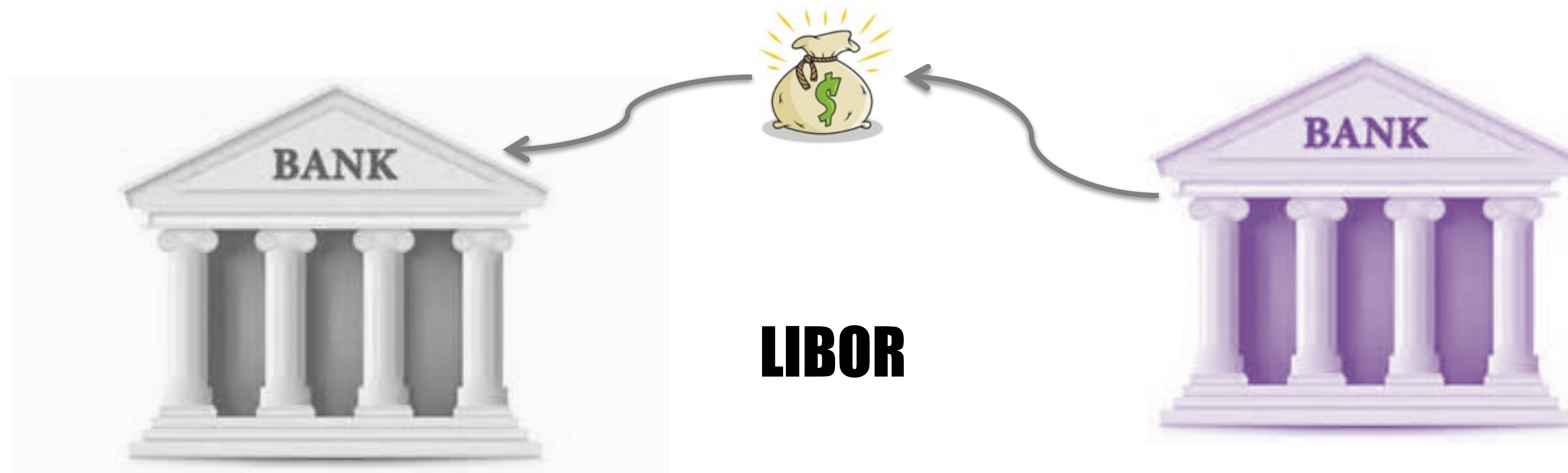
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Banks Reported Flawed
Interest Data for LIBOR

(WSJ)

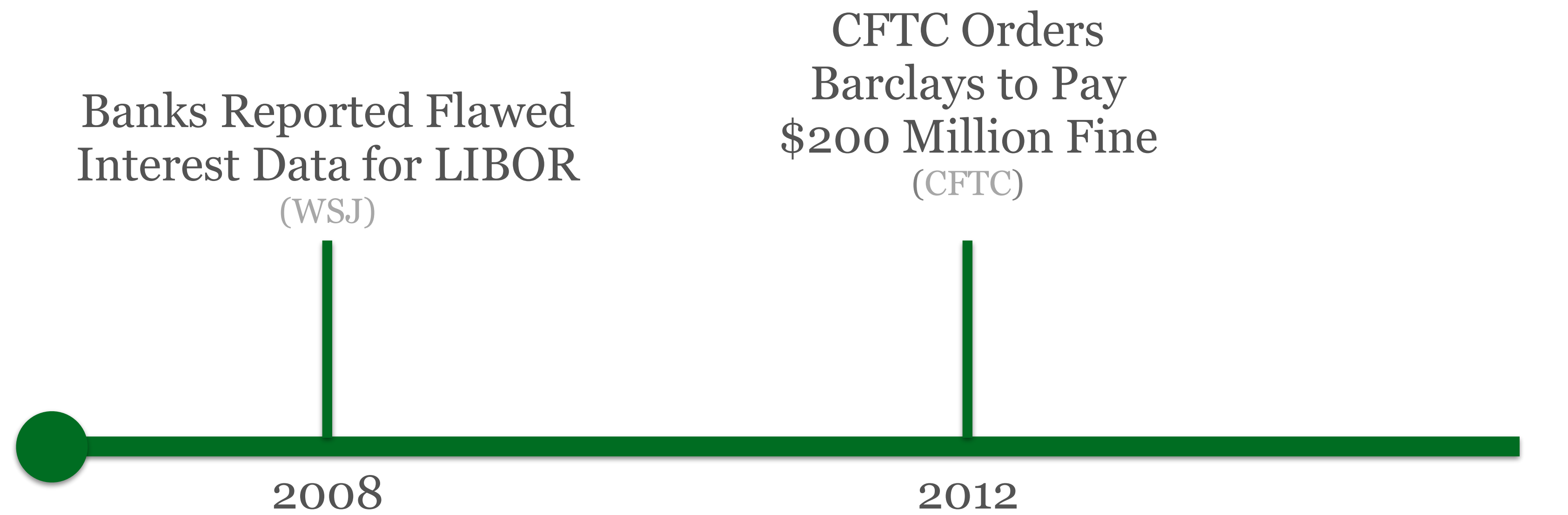
2008

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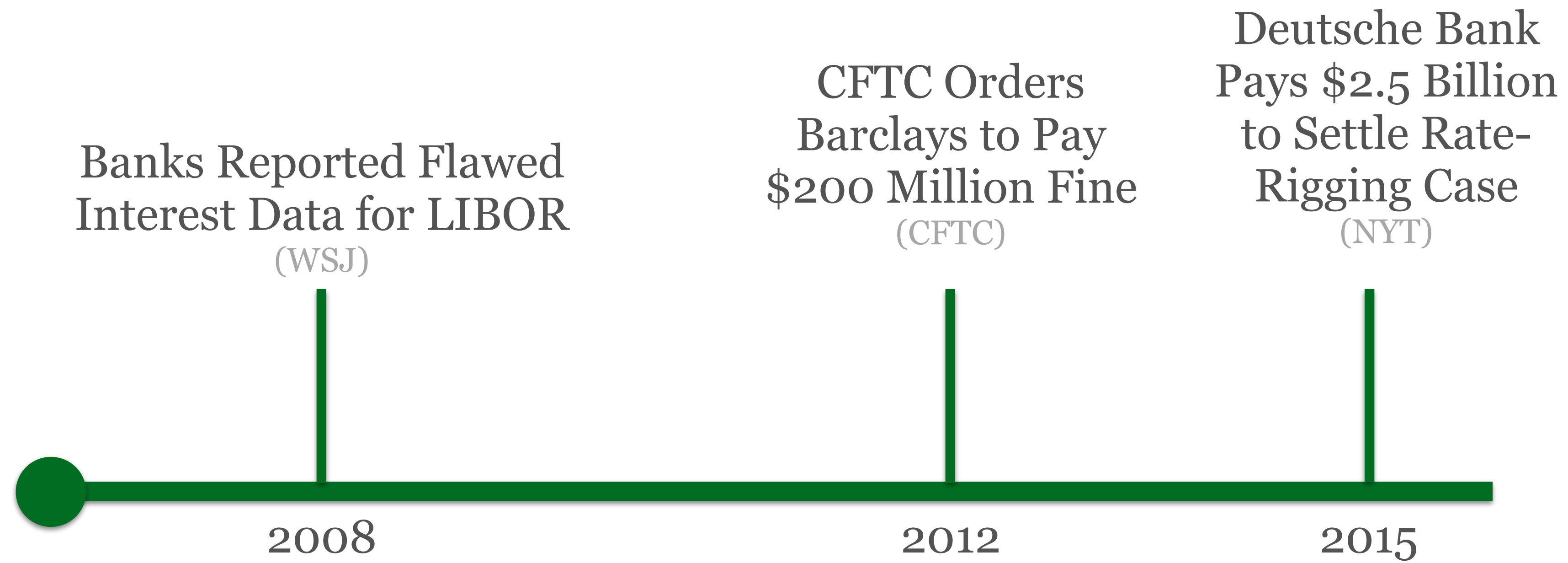


- Impacts consumer lending such as mortgages, student loans, etc. (LIBOR + ~3%)
- \$450 Trillion worth of financial deals are dependent on it
- Measure of trust in financial system

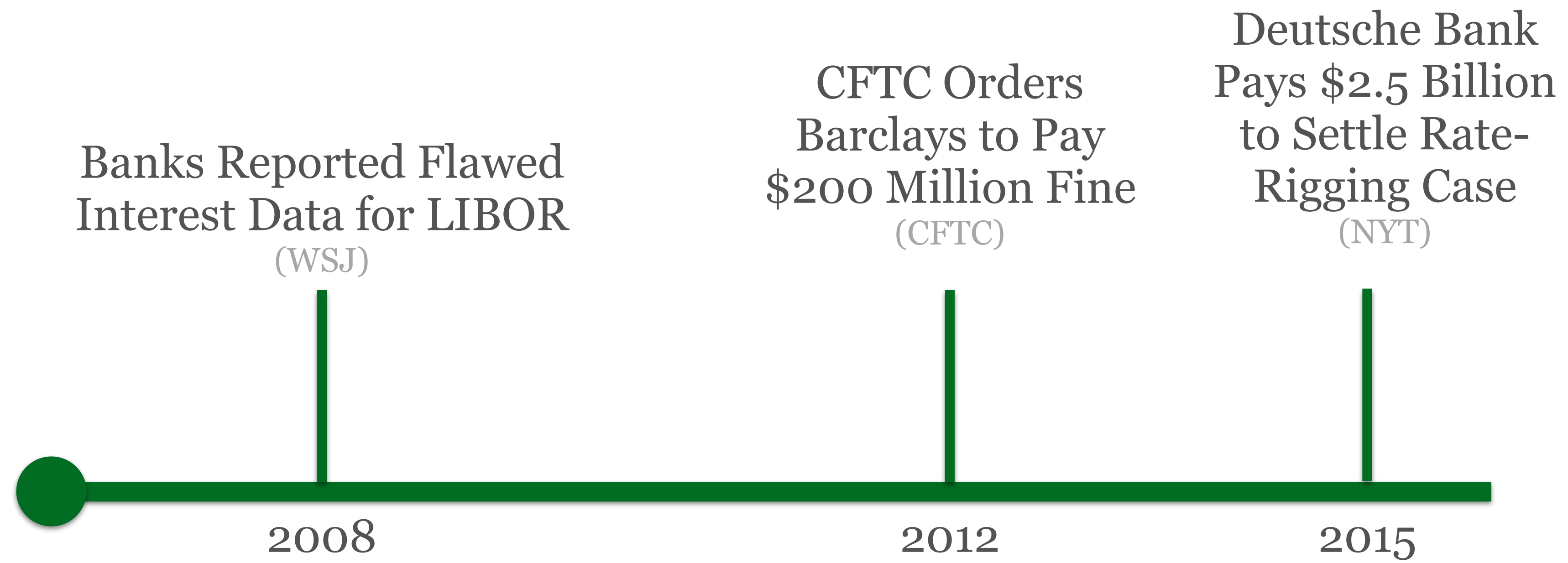
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Fines Totaling \$6 Billion!

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“The Cartel”

March 22, 2005: (emphasis added)

U.S. Dollar LIBOR Submitter:

if you need something in particular in the libors i.e. you have an interest in a high or a low fix let me know and there's a high chance i'll be able to go in a different level. just give me a shout the day before or send an email from your blackberry first thing.

New York U.S. Dollar Trader 1:

Thanks - our CP guys have been looking for it a bit higher - not a big deal

U.S. Dollar LIBOR Submitter:

if anything the cash has actually cheapened up since yesterday too albeit by 1/2 tick - true could get some sub 75 days thru the next week

April 1, 2005: (emphasis added)

London U.S. Dollar Trader 1:

COULD WE PLS HAVE A LOW 6MTH FIX TODAY OLD BEAN?

February 28, 2007: (emphasis added)

New York U.S. Dollar Trader 2:

U.S. Dollar LIBOR Submitter:

New York U.S. Dollar Trader 2:

LIBOR HIGHER TOMORROW?

shouldn't be

COME ON. **WE ALWAYS NEED HIGHER LIBORS !!!**

HAHA

U.S. Dollar LIBOR Submitter:

haha, i'll do my best fkcer

New York U.S. Dollar Trader 2:

~~NO WORRIES. JUST CURIOUS, U SURVE THE DEBACLE OF TH PAST 24 HRS>~~

Compliance Platform and Processing Pipeline

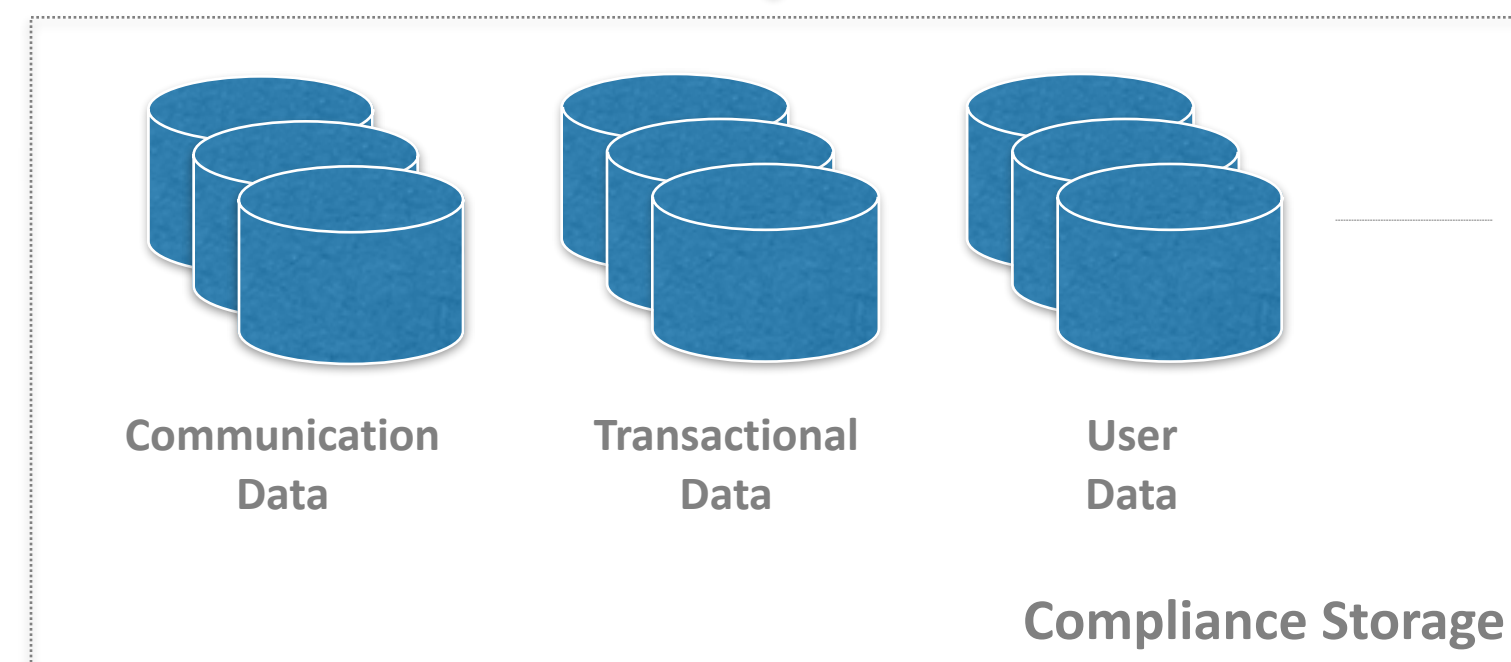
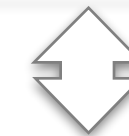
Human- and Machine-generated Data



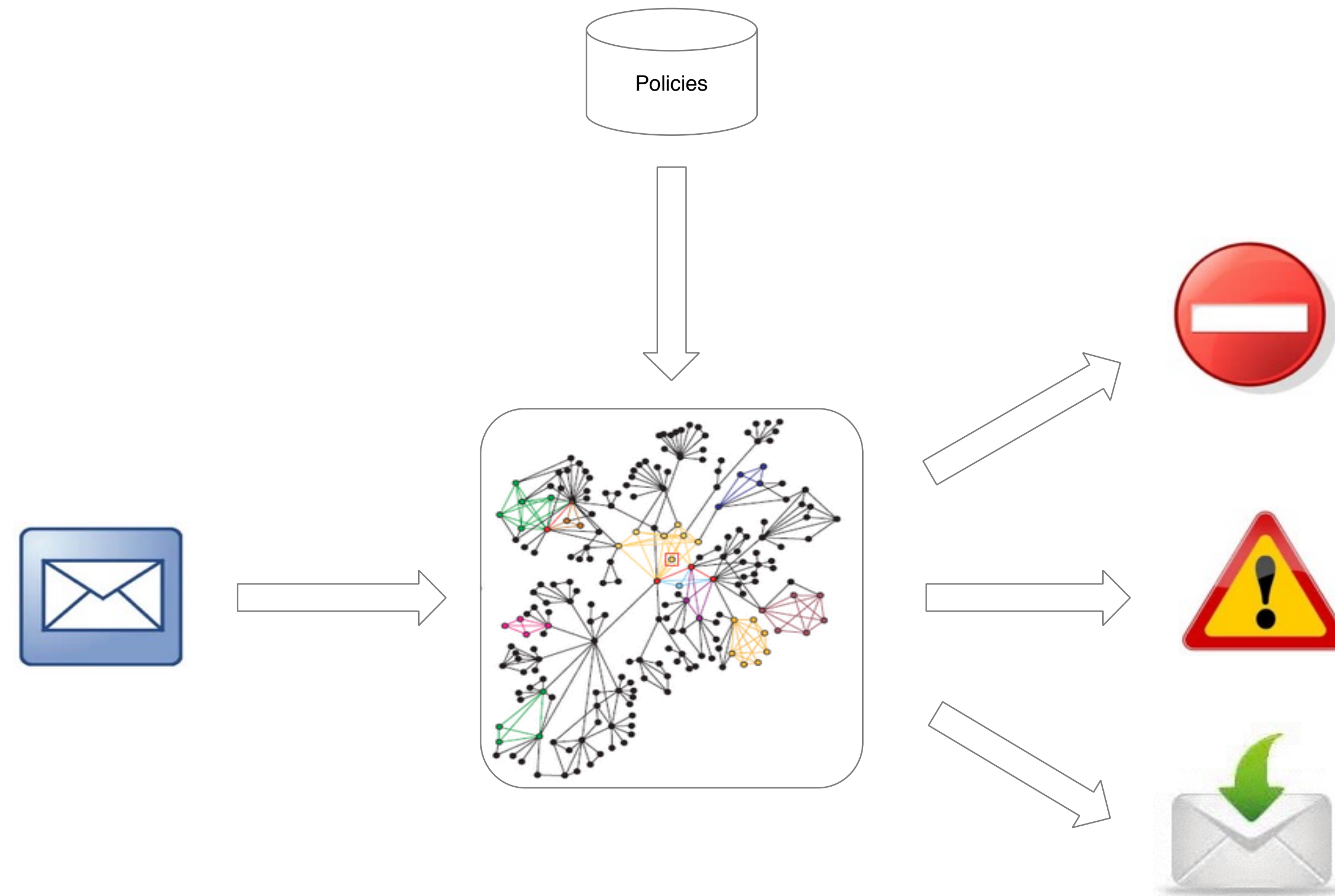
Compliance Platform



Compliance Officers



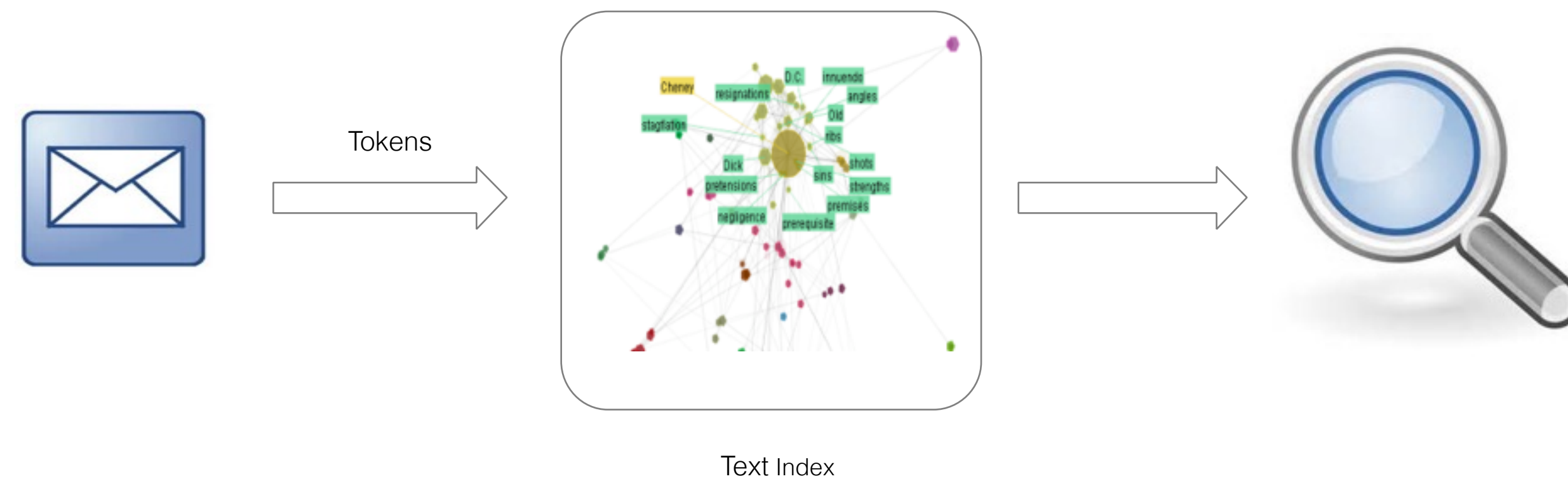
Work Loads – Complex Event Processing



- Real Time Low Latency Processing
- CPU bound

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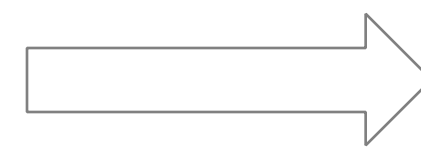
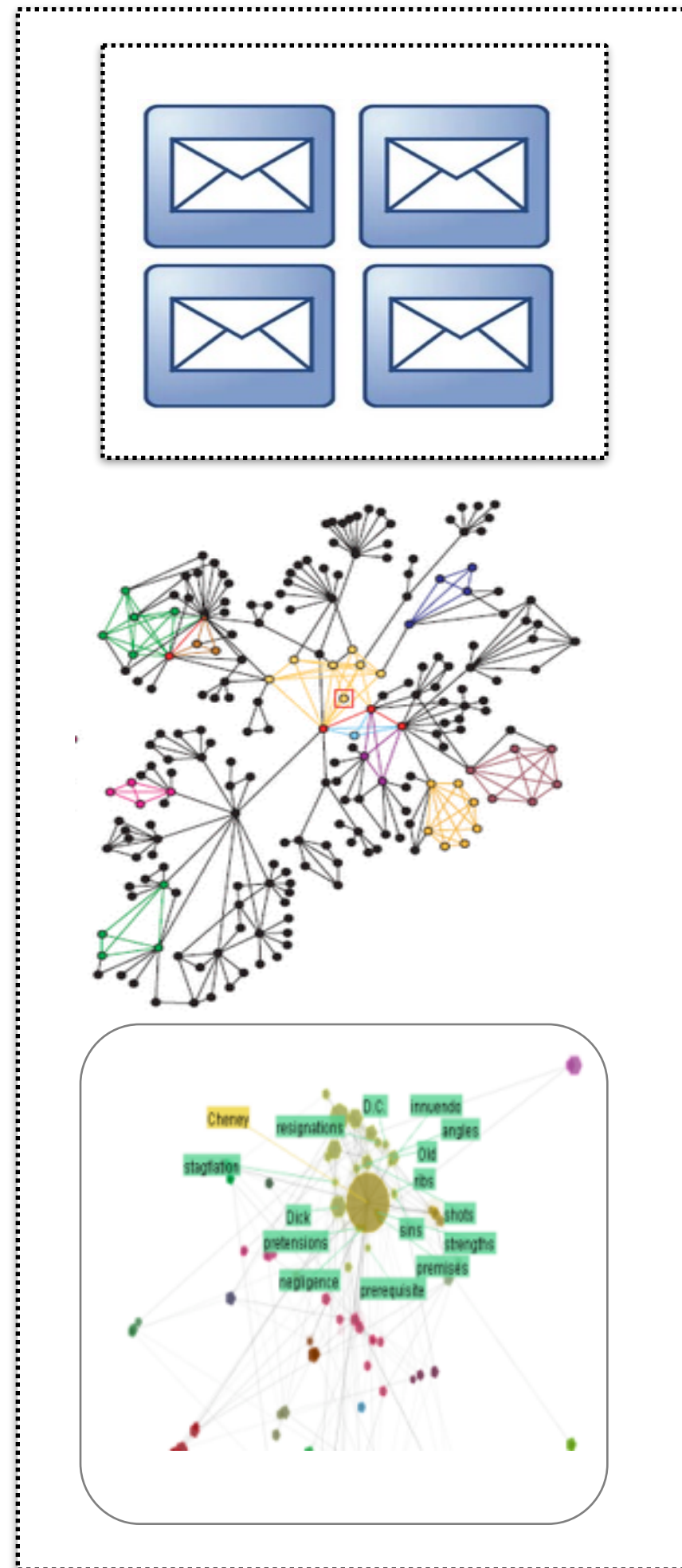
Work Loads – Text Searches



- Distributed
- Memory bound

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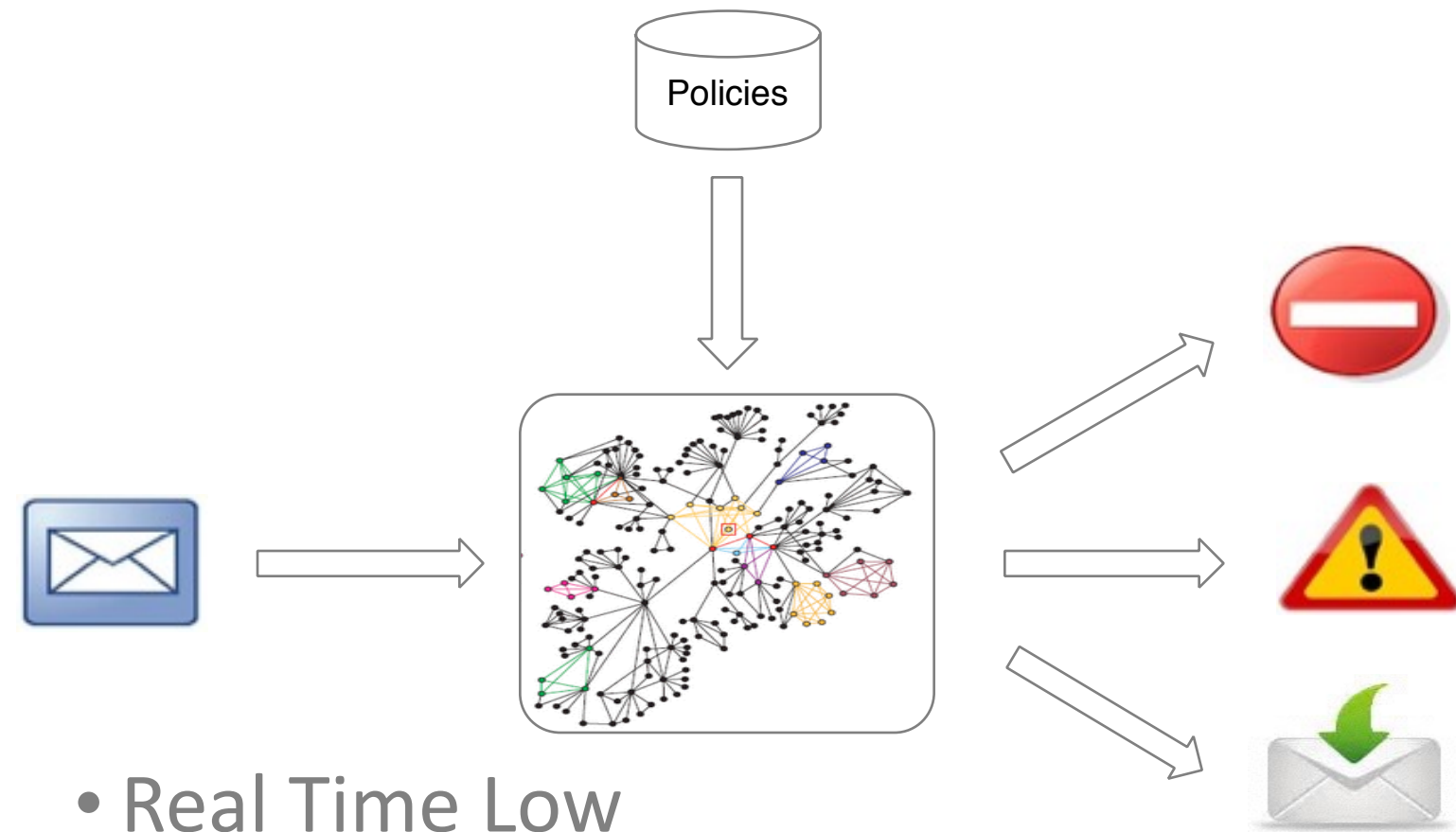
Work Loads – Analytics & Reporting



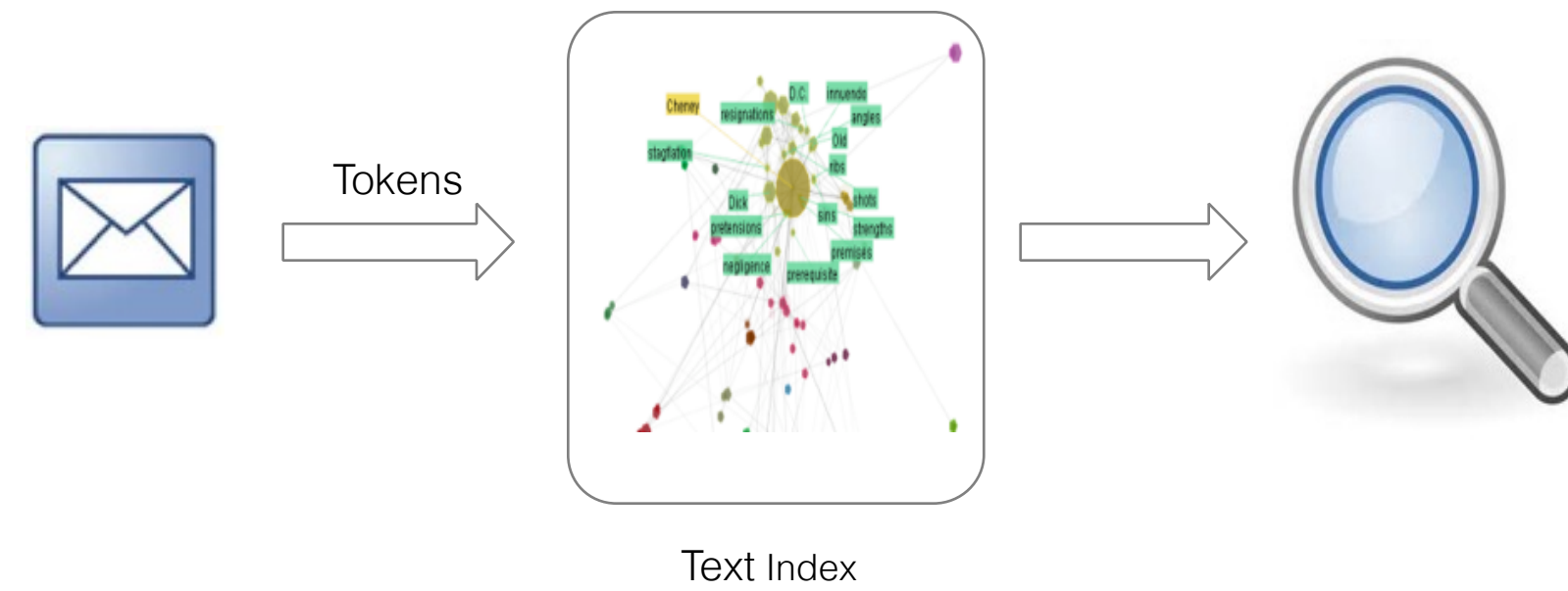
- Ad Hoc
- Distributed
- Reporting: I/O bound
- Analytics: CPU bound

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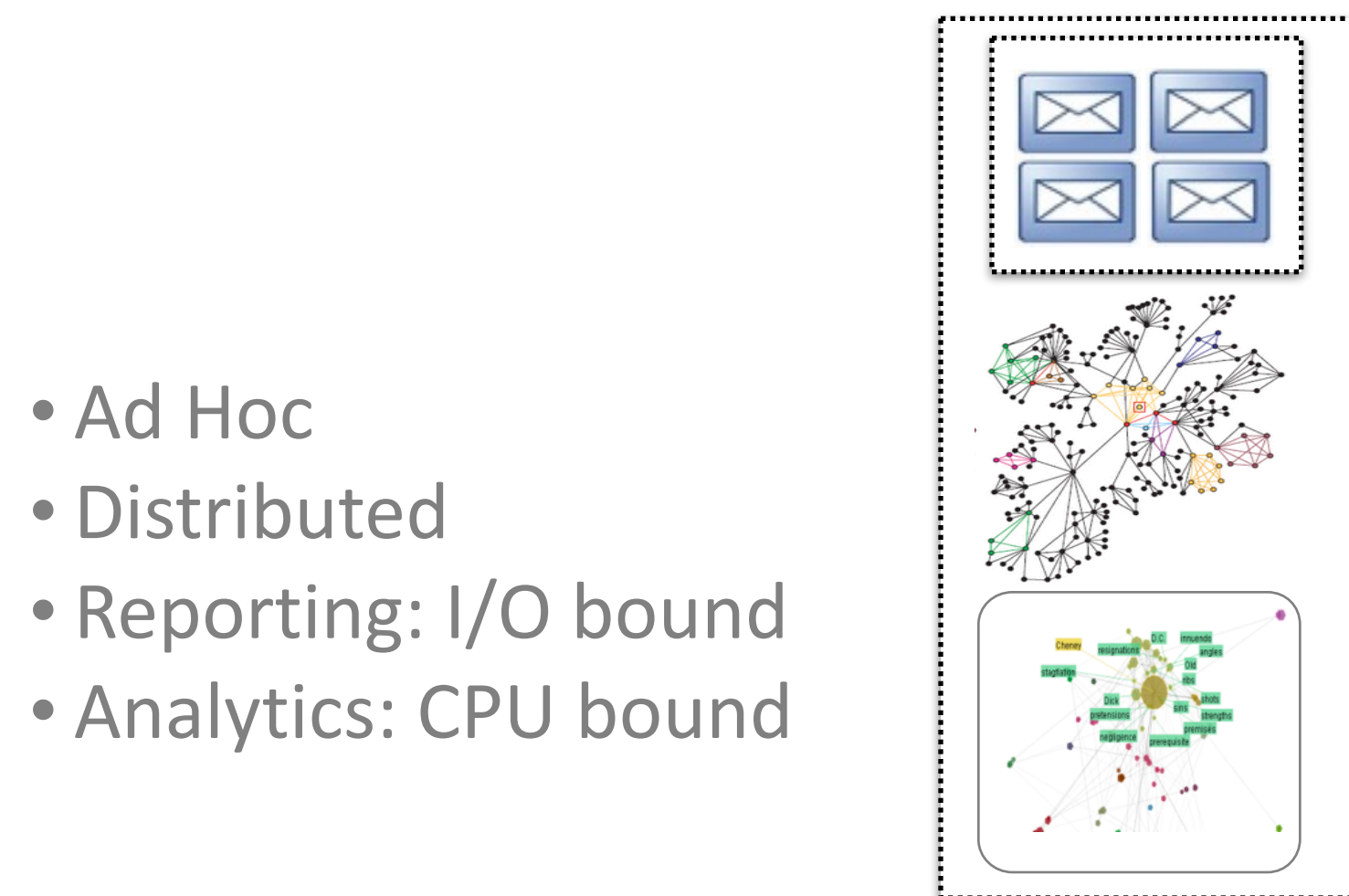
Work Loads



- Real Time Low Latency Processing
- CPU bound



- Distributed
- Memory bound

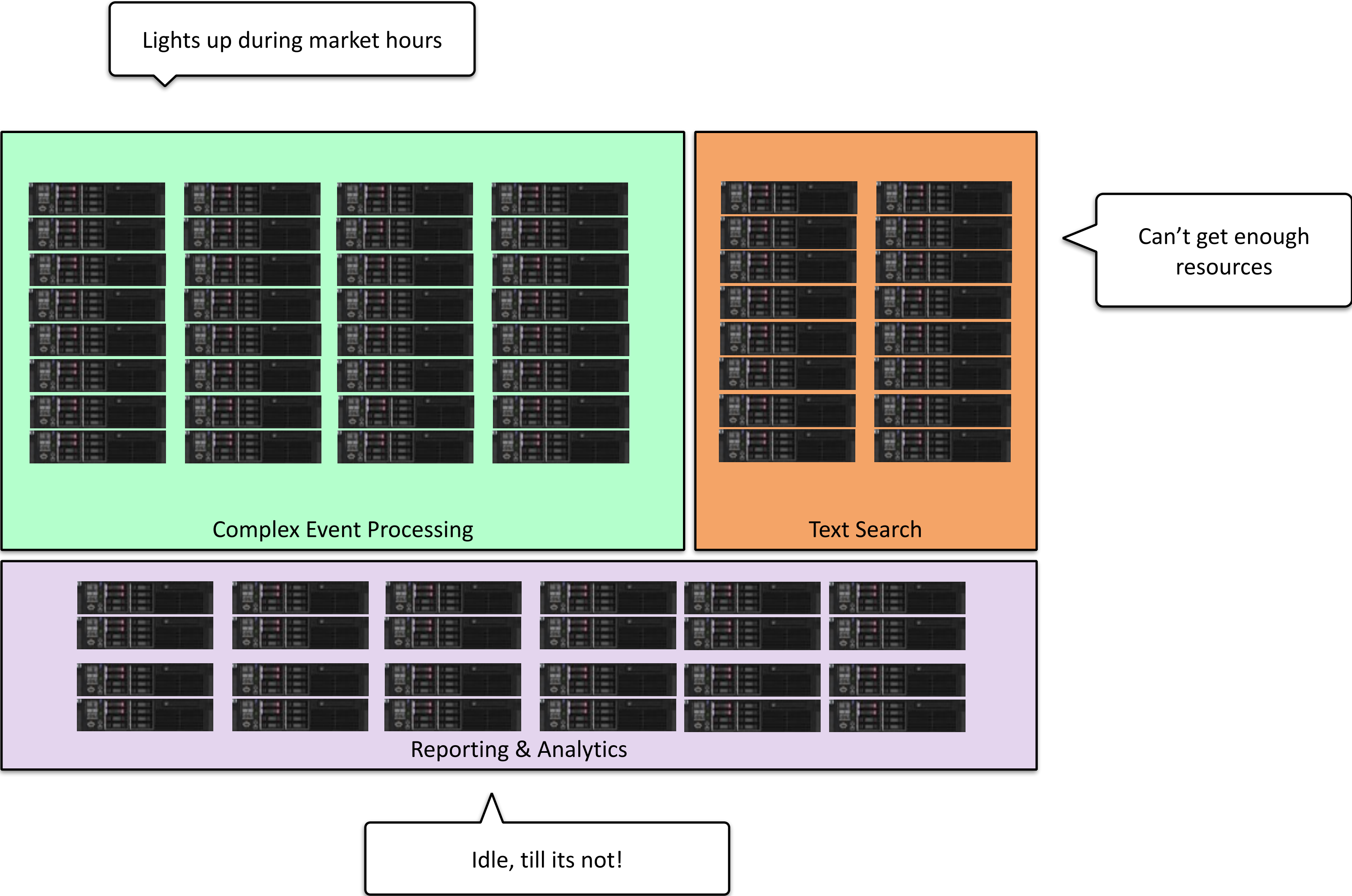


- Ad Hoc
- Distributed
- Reporting: I/O bound
- Analytics: CPU bound

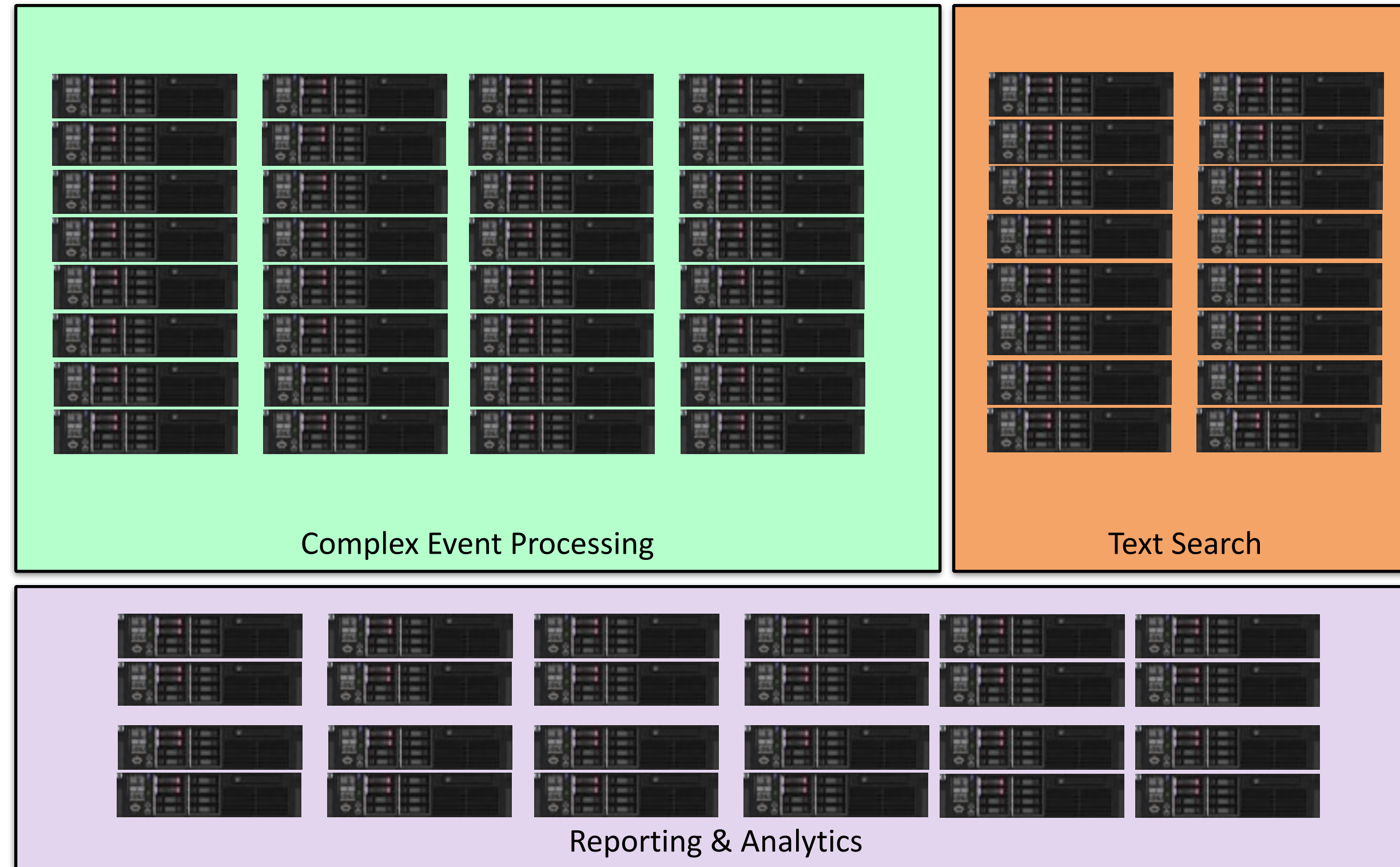


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Before Mesos

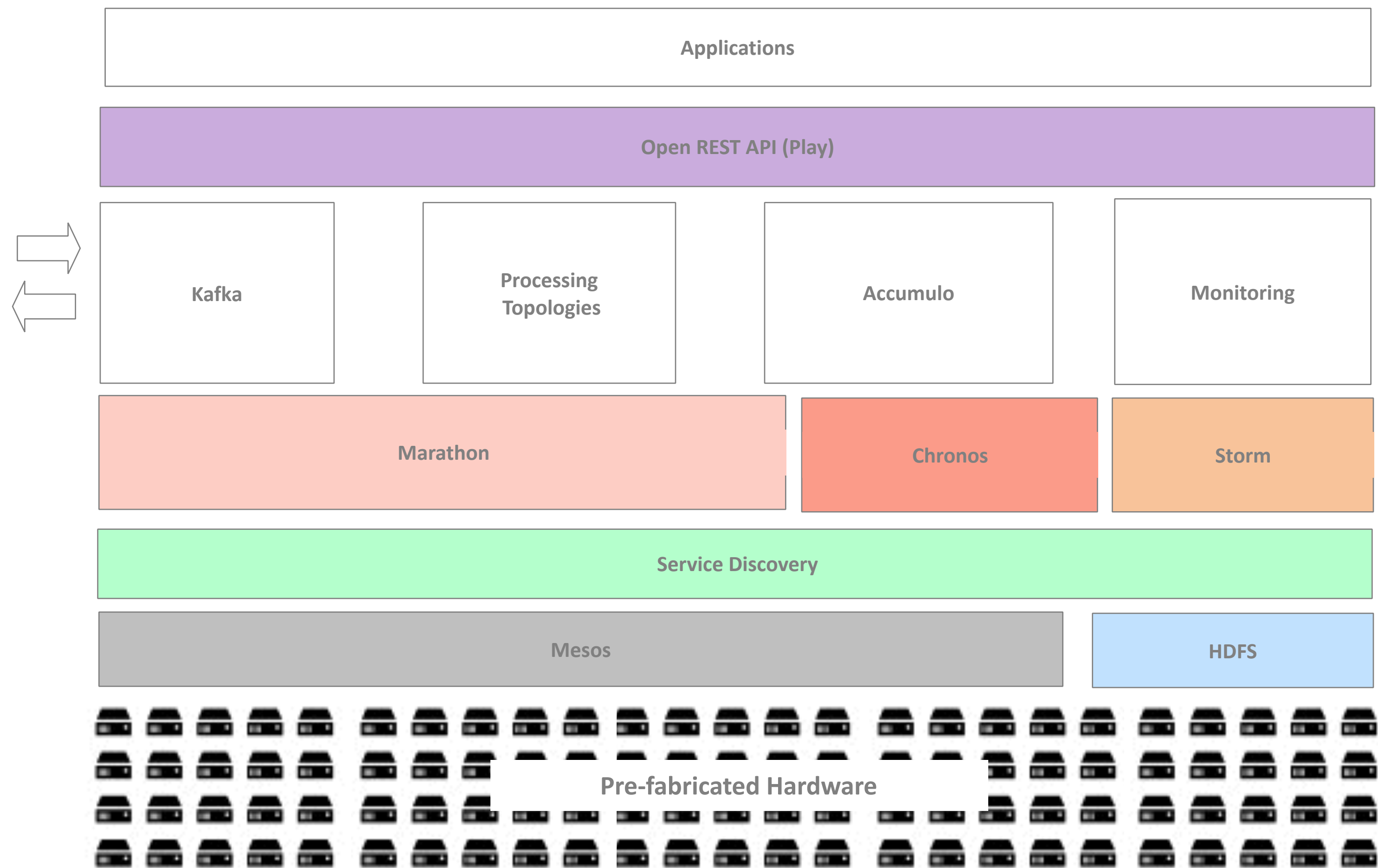


Before Mesos

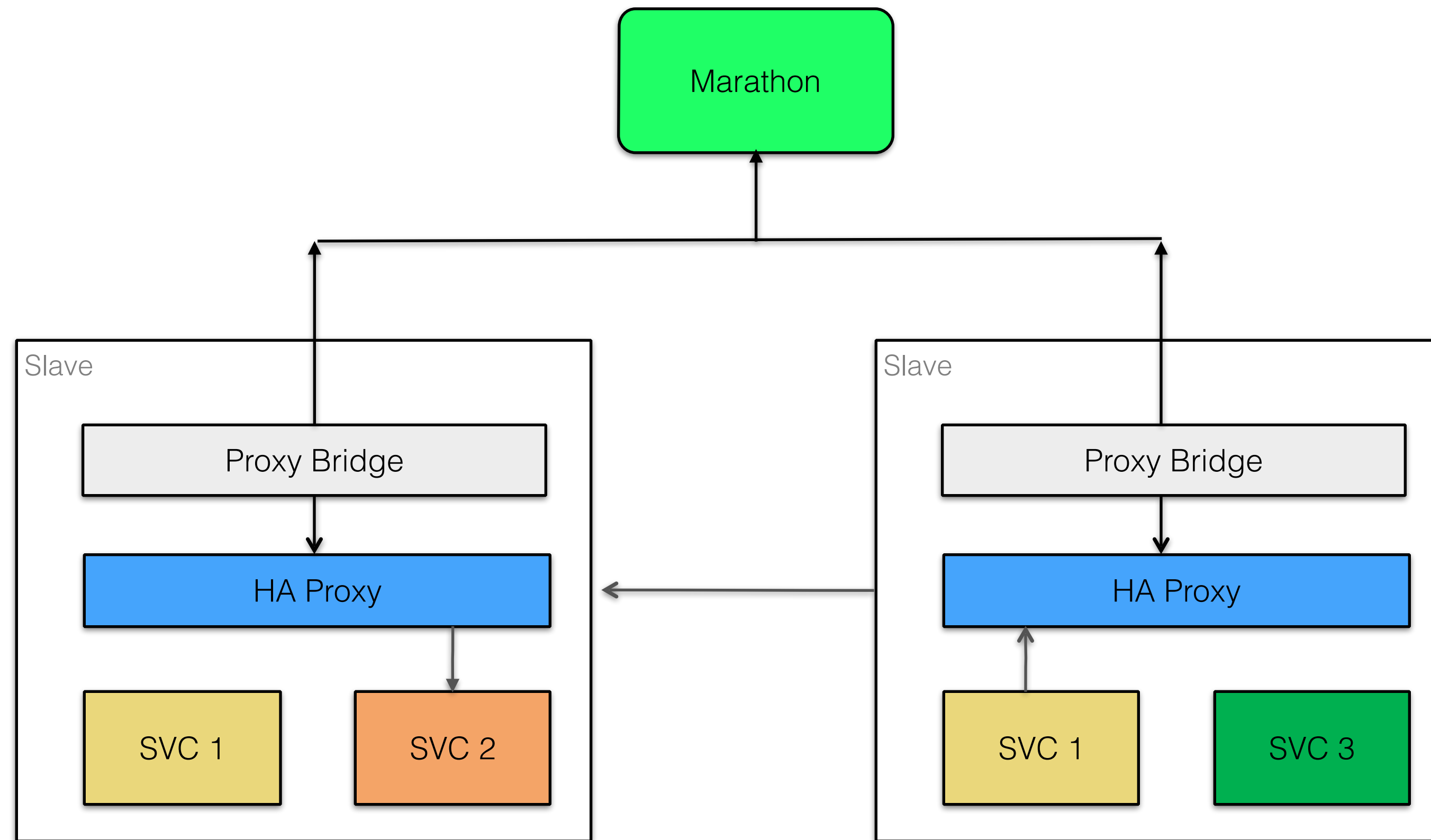


- Time consuming to re-size a static cluster
- Wasted resources
- Operational overhead

Elastic Data Processing and Analytics Stack

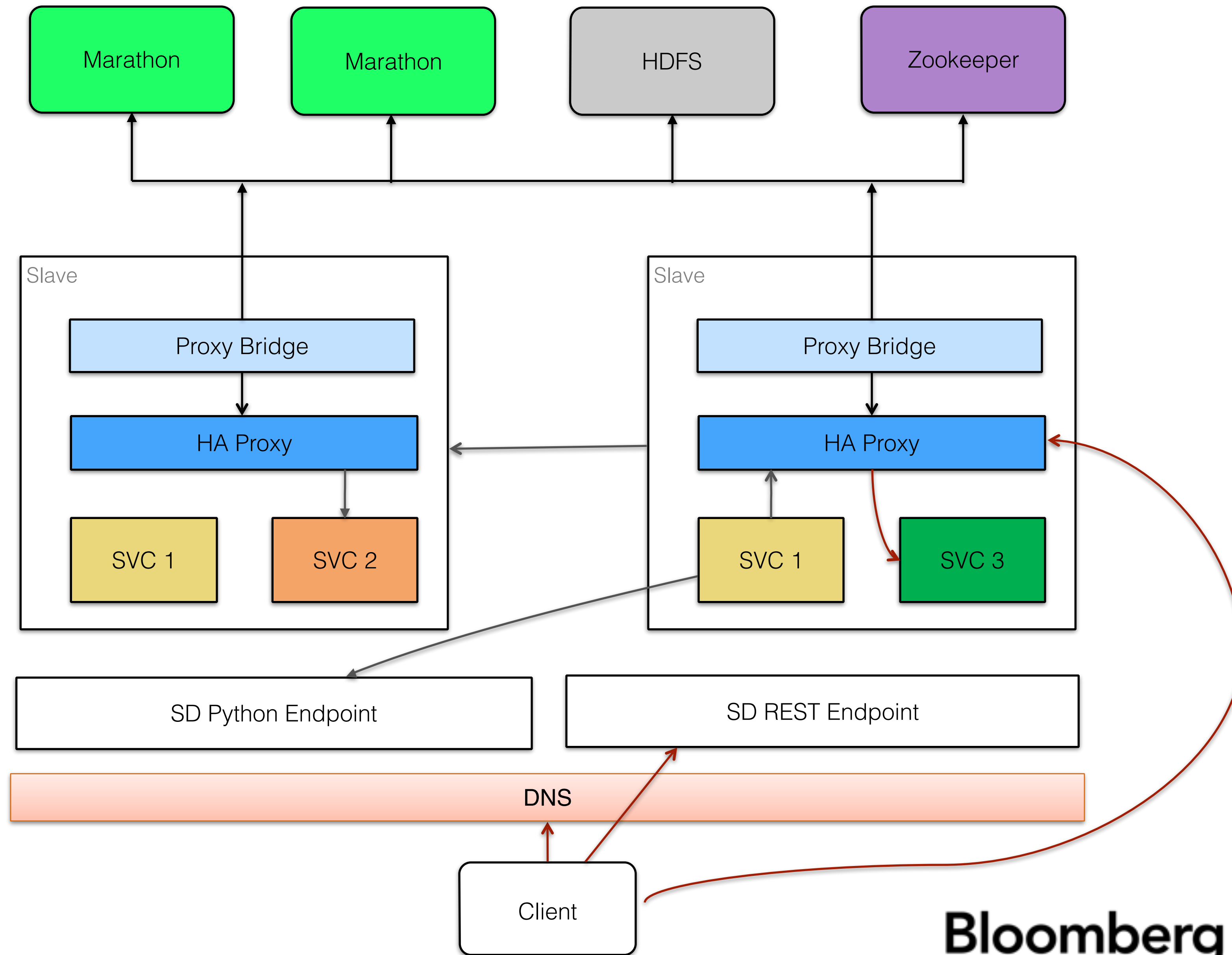


Service Discovery (Mesosphere Implementation)



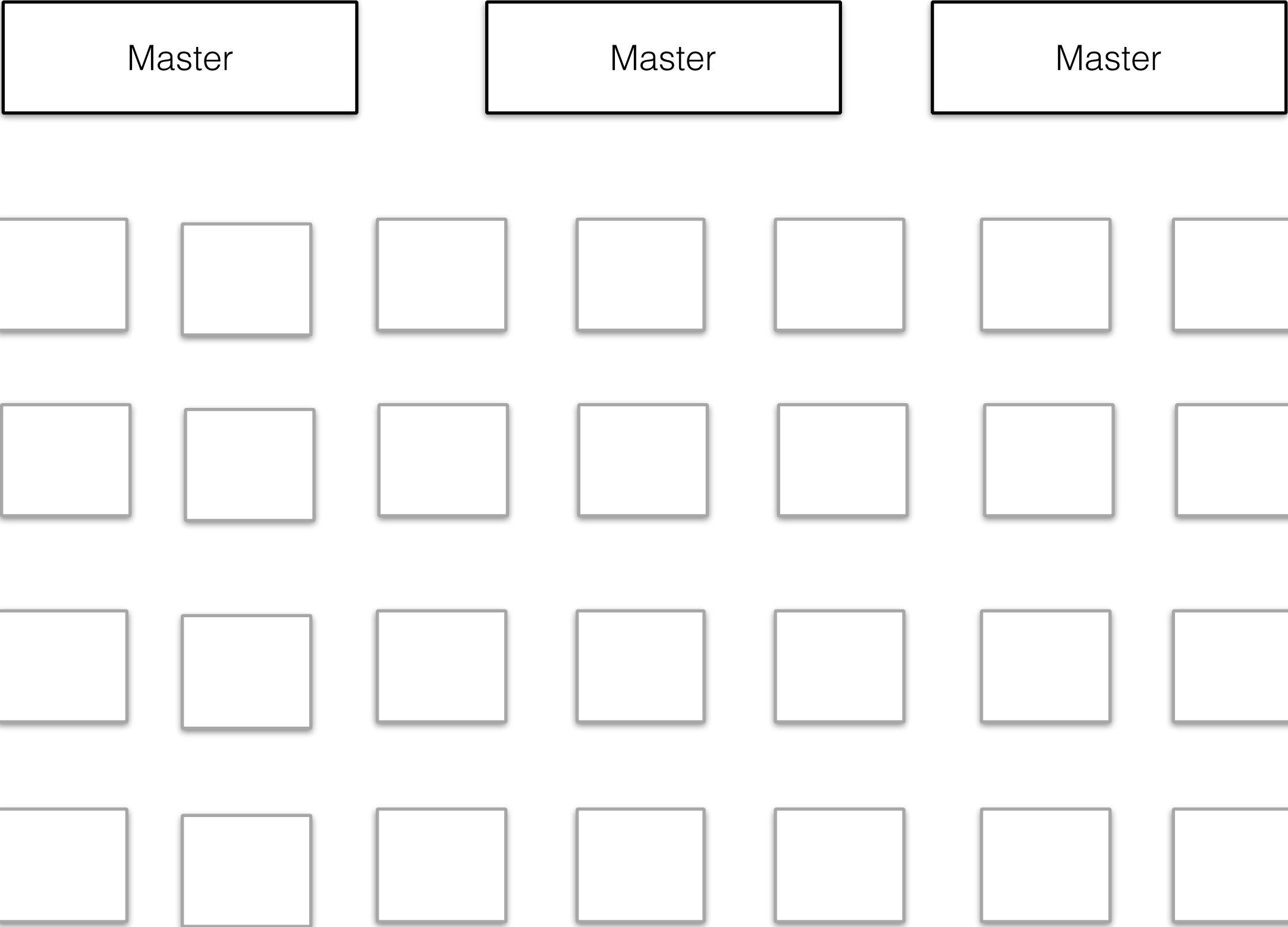
- Only works with Marathon
- No support for multiple Marathons
- Services not running on Mesos
- How do clients discover global port in Marathon?
- How do external clients discover services running on Mesos?

Service Discovery Modifications



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Monitoring Applications



Monitoring Applications

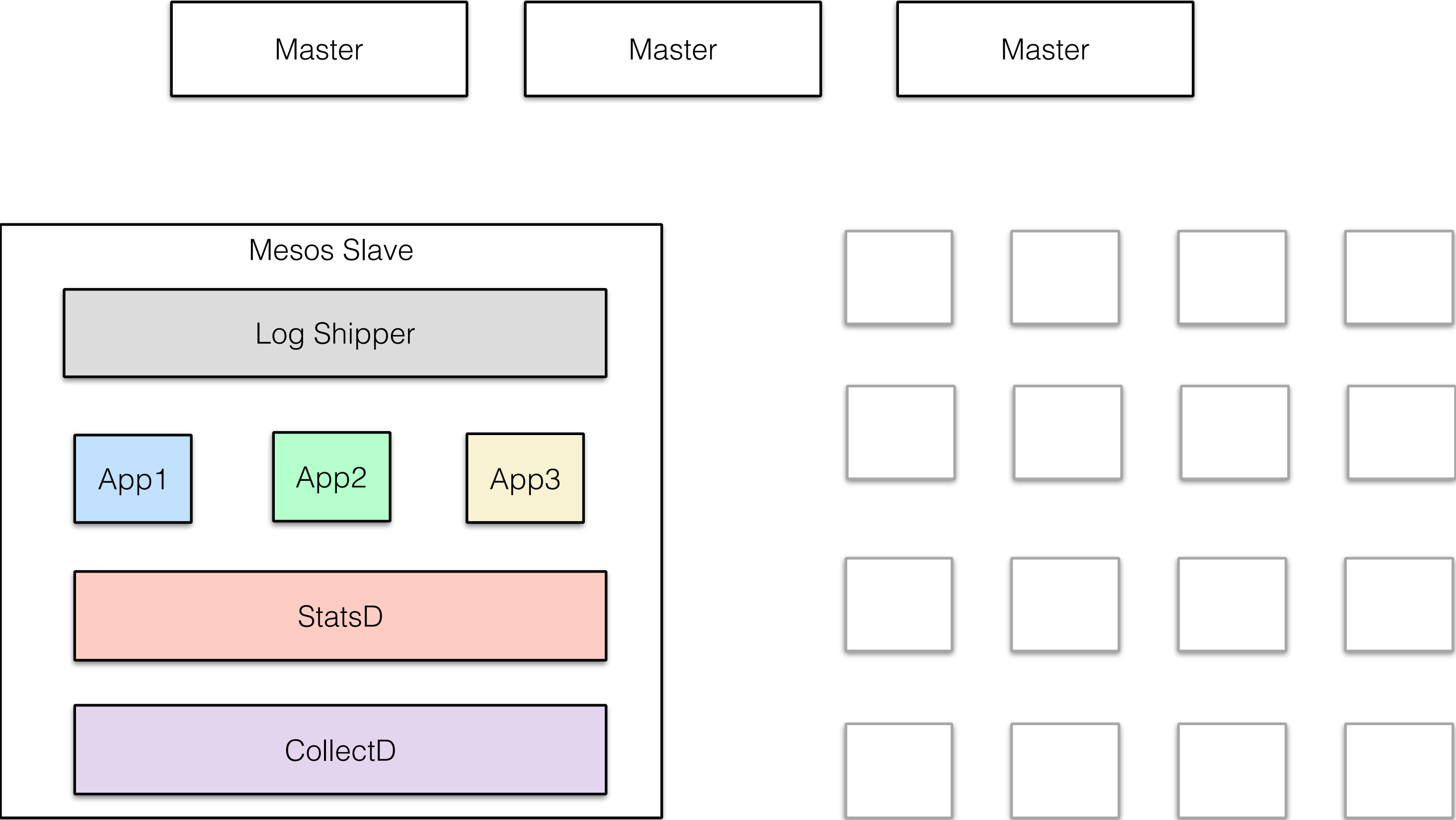


Monitoring Applications

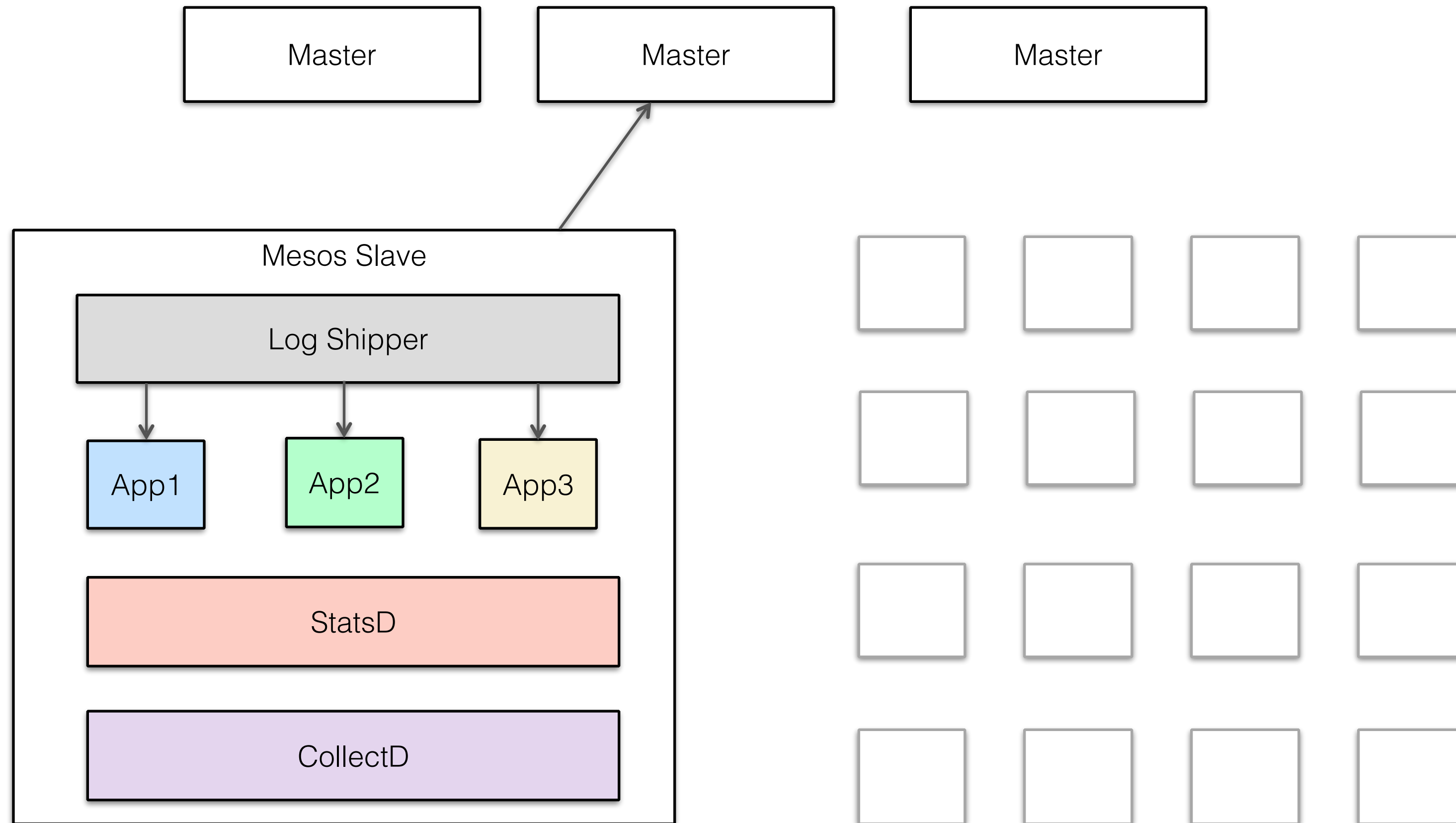


- Log aggregation
- Application statistics
- Alerting!

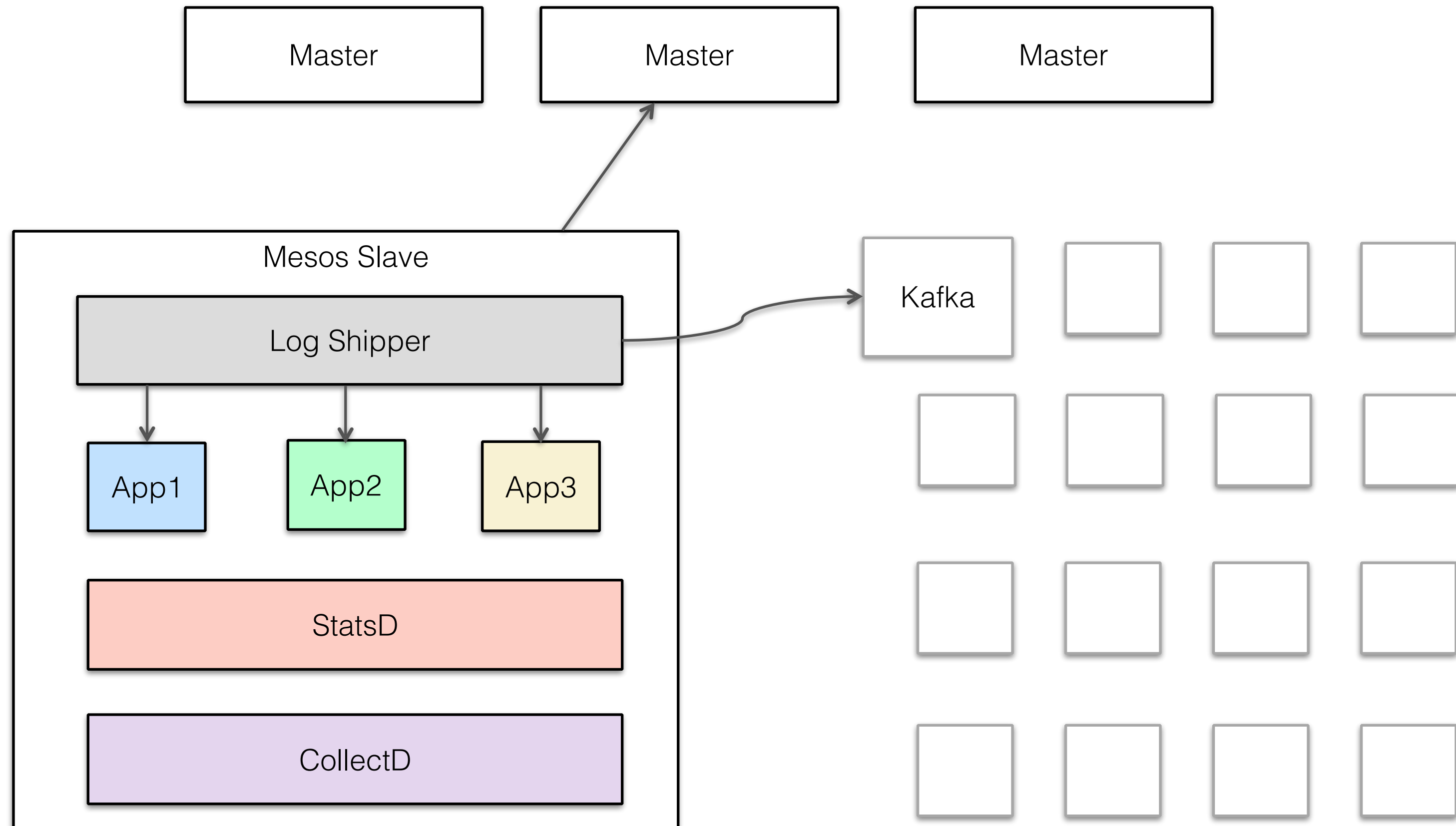
Monitoring Applications



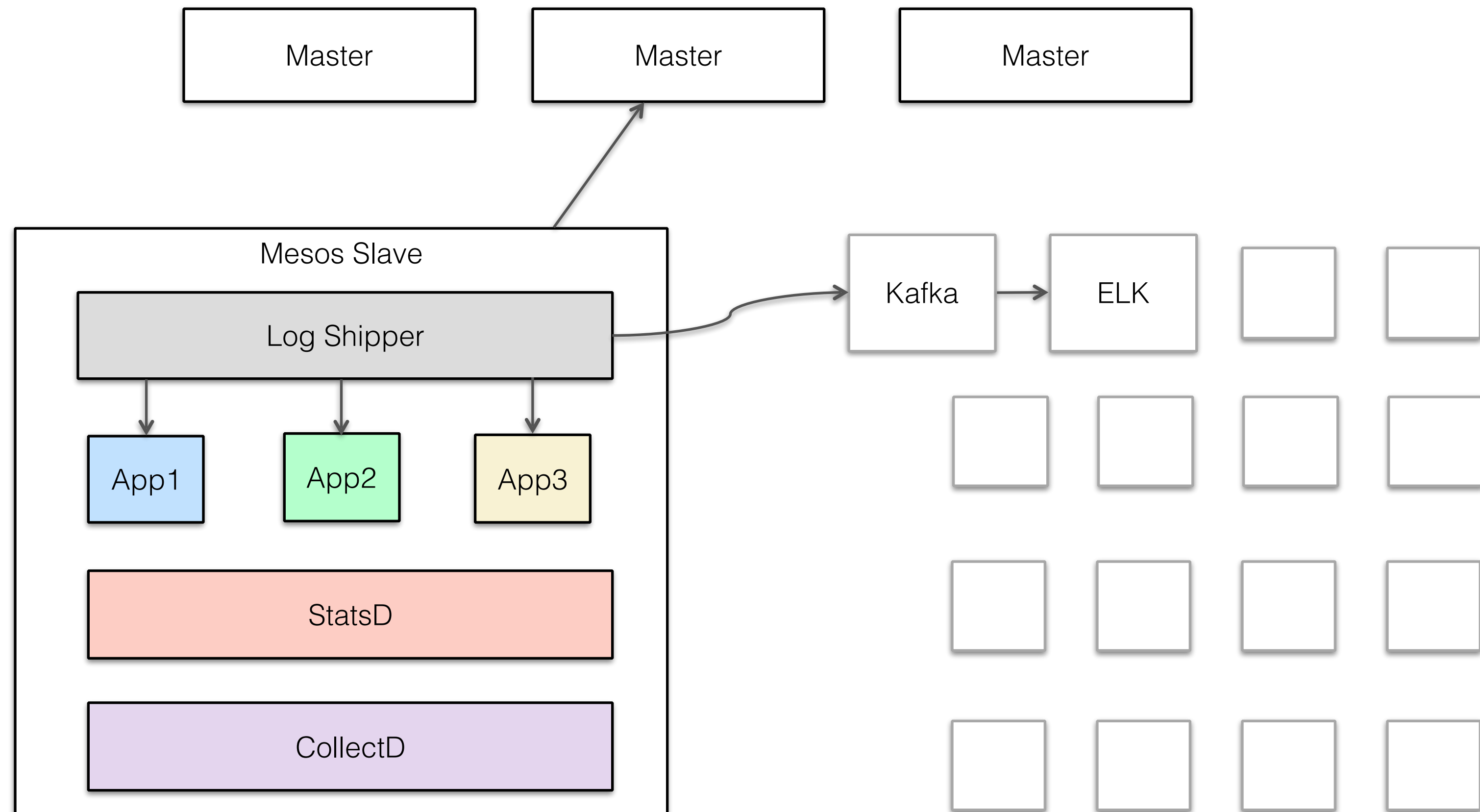
Monitoring Applications



Monitoring Applications

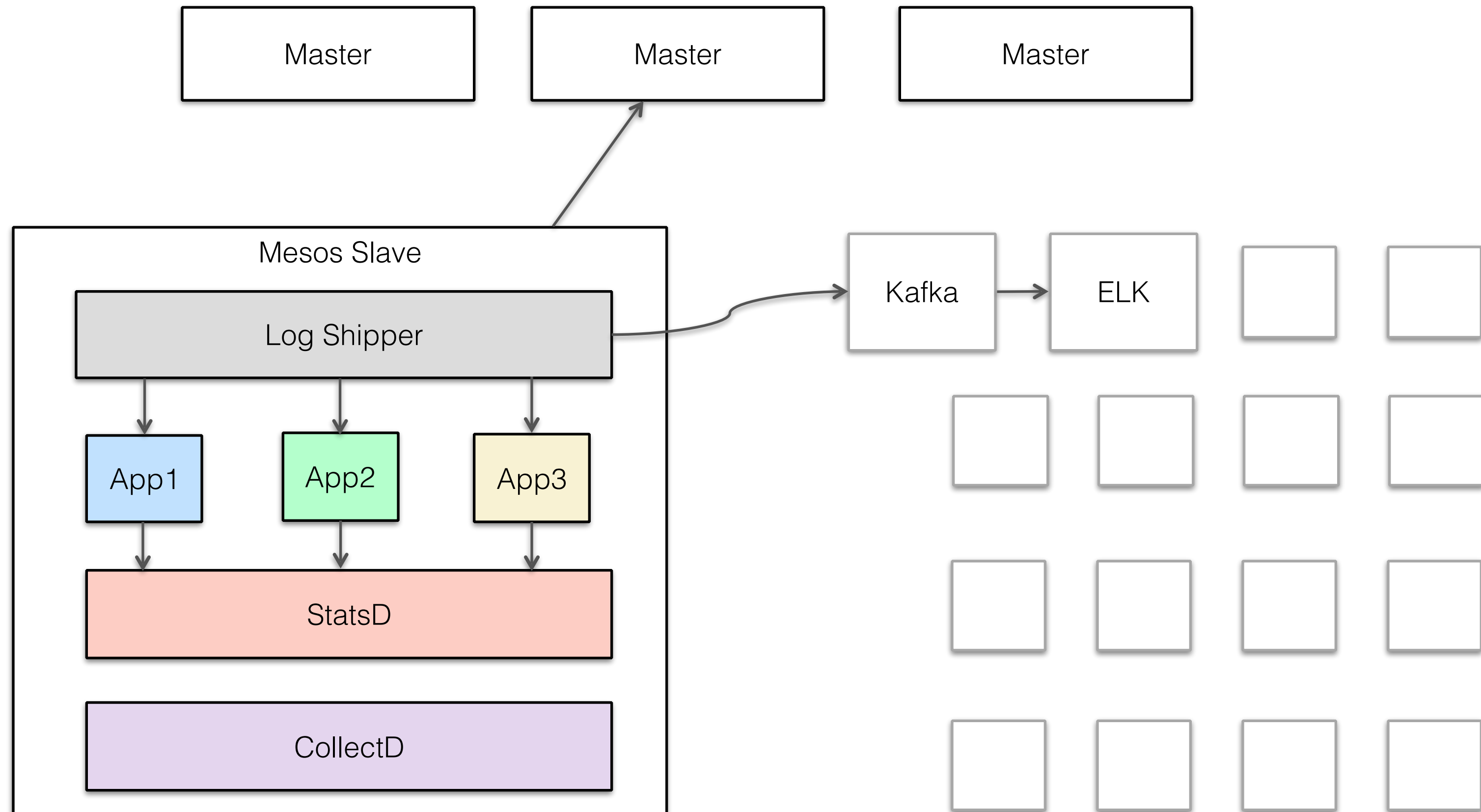


Monitoring Applications



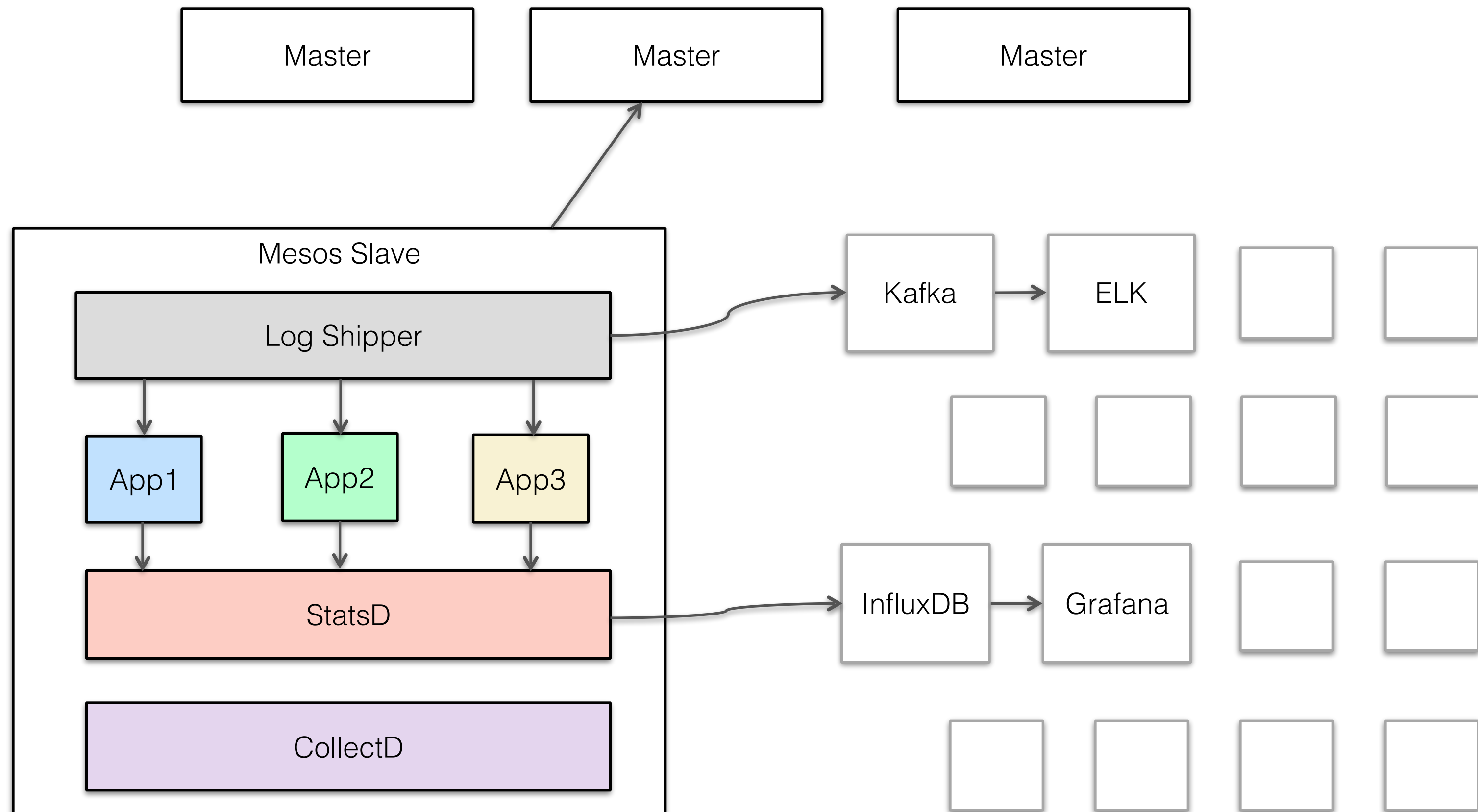
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Monitoring Applications

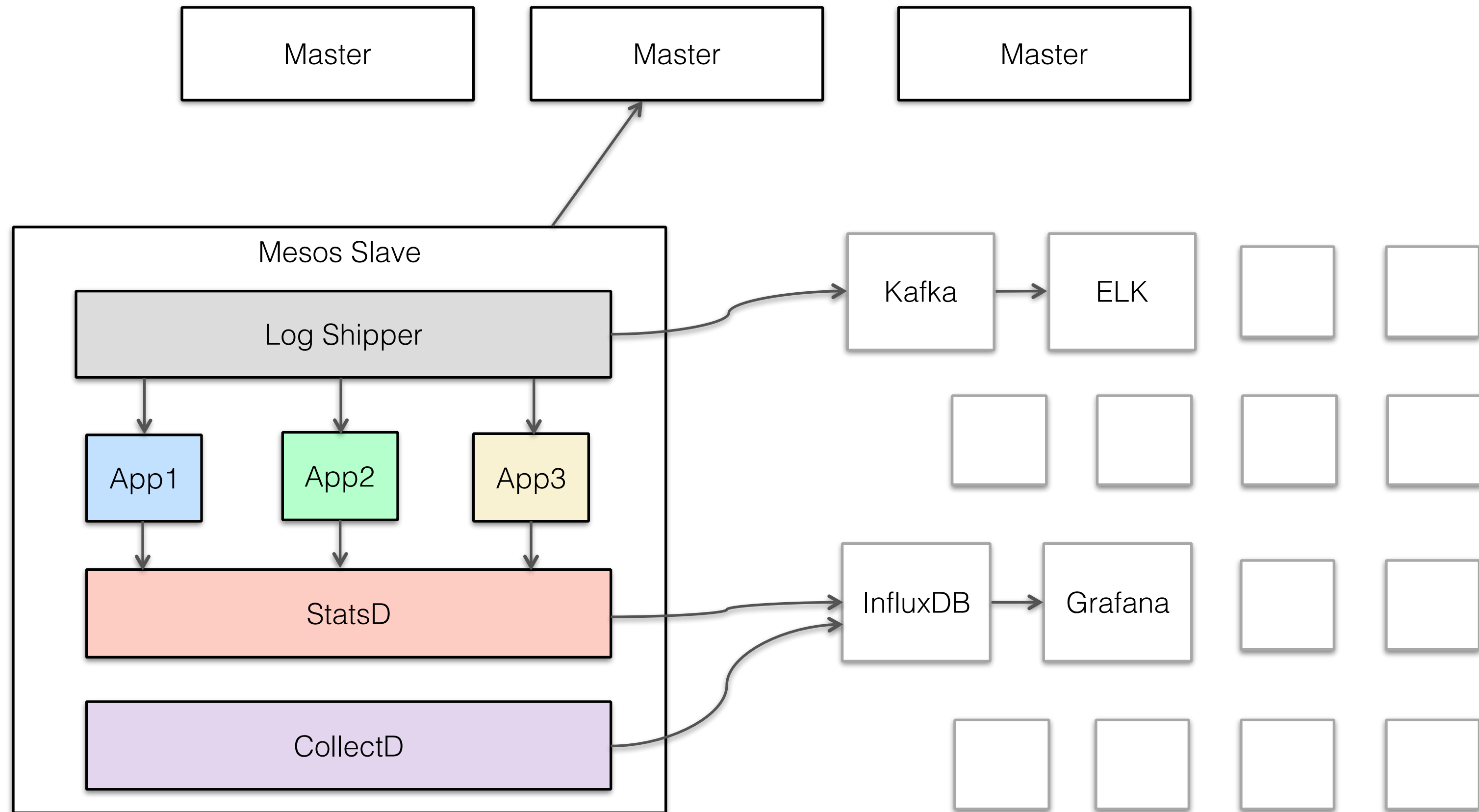


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Monitoring Applications

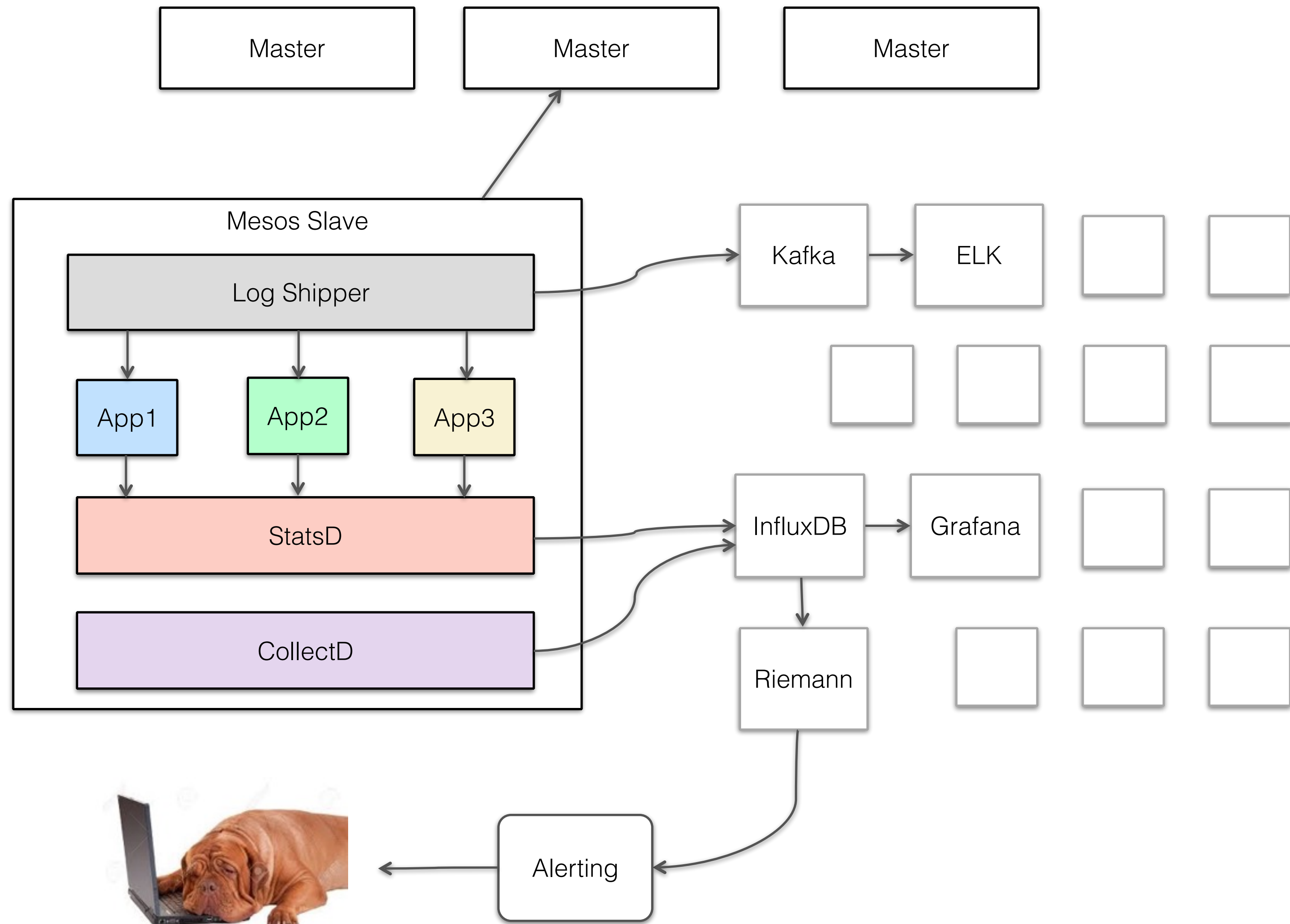


Monitoring Applications



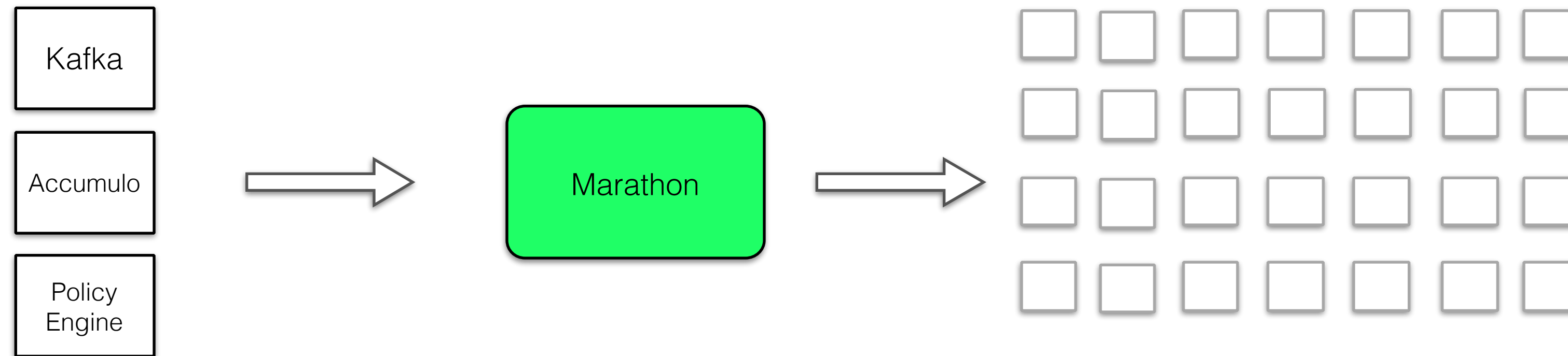
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Monitoring Applications



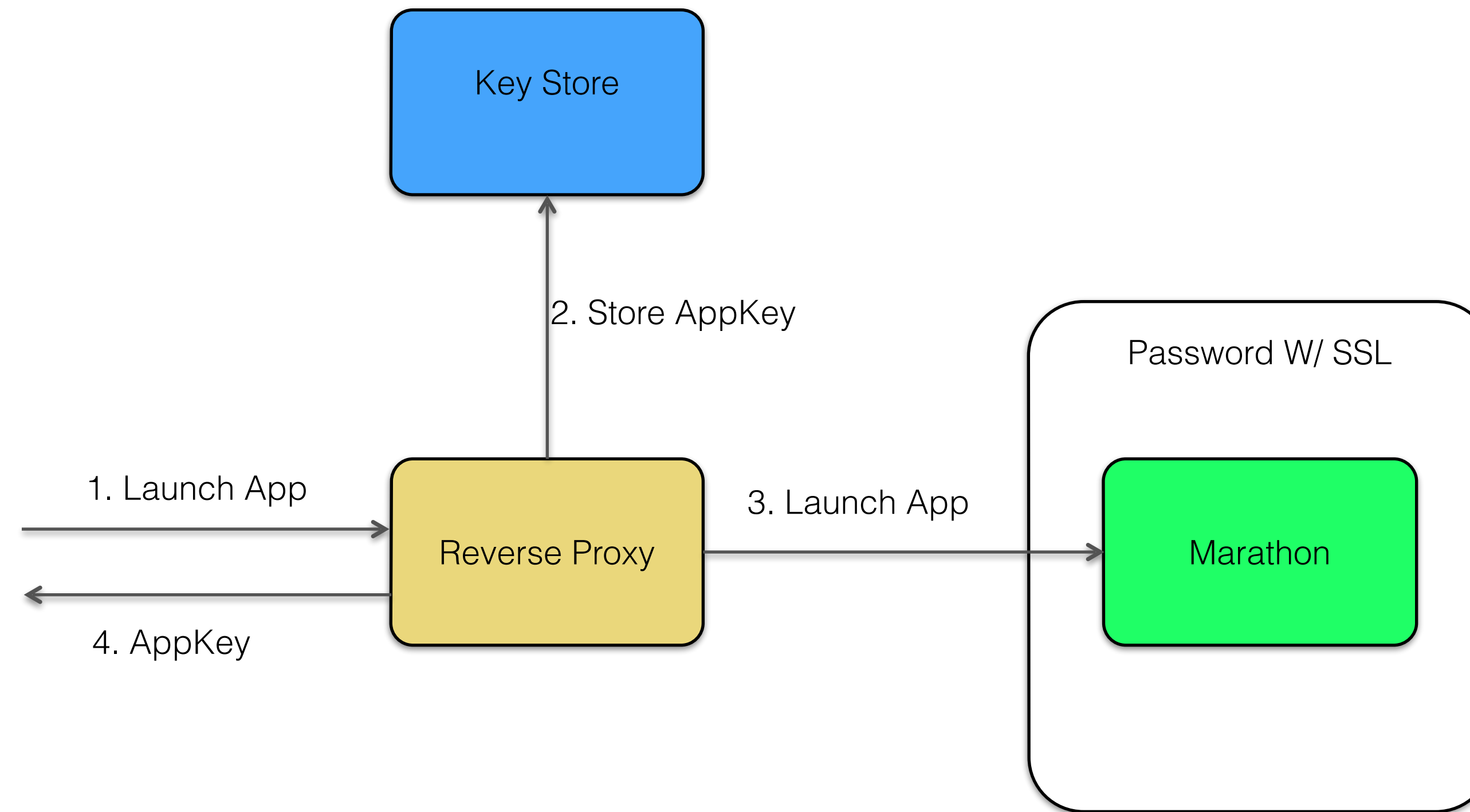
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Access Control

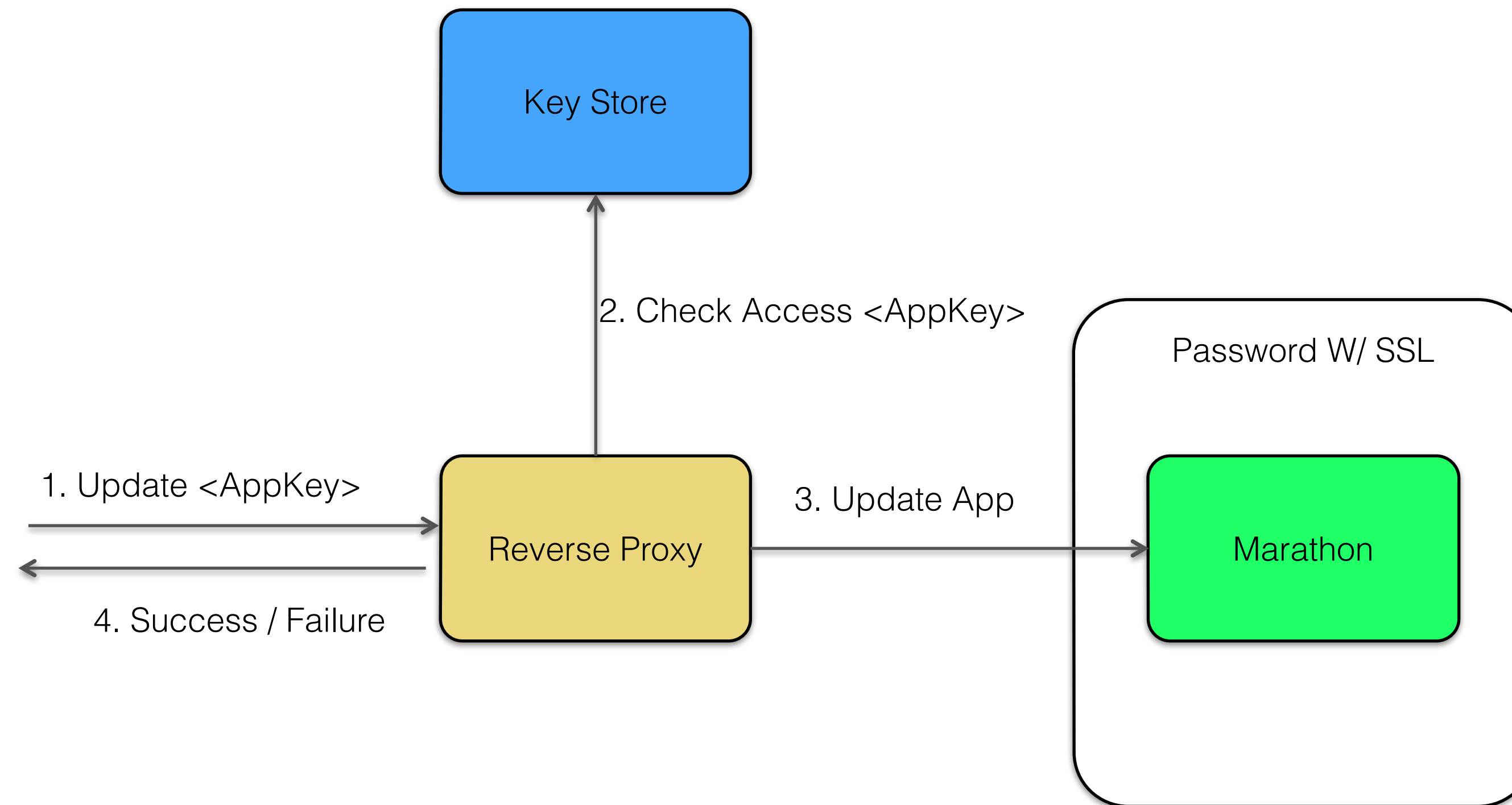


- Applications deployed via Marathon
- Give the power to users to deploy when they want and what they want
- Isolate core services from accidents
- Isolate user applications

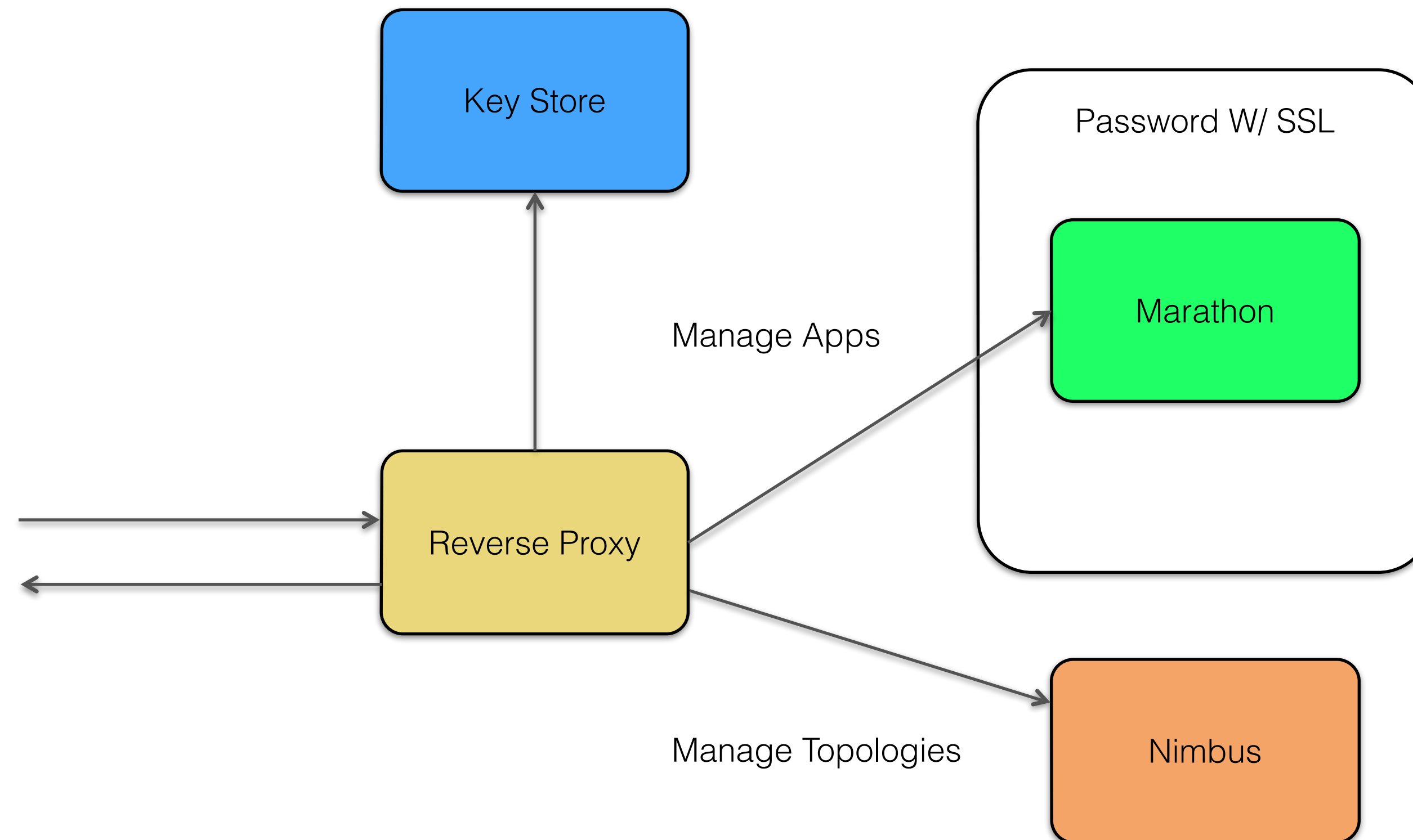
Access Control - Deploying Application



Access Control



Access Control



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Lessons

- Protect your Zookeeper cluster(s)
- Don't run HDFS on Mesos in your first deployment
- Understand the back-off factor in Marathon
 - <https://github.com/mesosphere/marathon/issues/1504>
- Clean up the sandboxes periodically (and frequently)
- Build a monitoring infrastructure for applications
- Run multiple clusters
- Mesos is very stable!

We Are Hiring!

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